

# SE MRC College Algebra Content Review

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## Basics of Functions and Their Graphs Section 2.1

### Learning Objectives:

1. Find the domain and range of a relation.
2. Determine whether a relation is a function.
3. Determine whether an equation represents a function.
4. Evaluate a function.
5. Graph functions by plotting points.
6. Use the vertical line test to identify functions.
7. Obtain information about a function from its graph.
8. Identify the domain and the range of a function from its graph.
9. Identify the intercepts from a function's graph.

3. Determine whether the relation is a function. Give the domain and the range for the relation.

$\{(5, -6), (9, 4), (1, 1), (4, 4)\}$

Is this a function? \_\_\_\_\_

The domain is \_\_\_\_\_

The range is \_\_\_\_\_

4. Evaluate the function  $f(x) = x^2 + 5x - 9$  at the given values of the independent variable and simplify.

$f(2) =$

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1. Determine whether the relation is a function. Give the domain and the range for the relation.

$\{(4, 4), (5, 5), (8, 8)\}$

Is this a function? \_\_\_\_\_

The domain is \_\_\_\_\_

The range is \_\_\_\_\_

$f(x + 3) =$

2. Determine whether the relation is a function. Give the domain and the range for the relation.

$\{(4, 5), (4, 8), (6, 5), (6, 8)\}$

Is this a function? \_\_\_\_\_

The domain is \_\_\_\_\_

The range is \_\_\_\_\_

$f(-x) =$

5. Evaluate the function  $f(x) = 6x - 8$  at the given values of the independent variable and simplify.

$$f(7) =$$

$$f(x + 2) =$$

$$f(-x) =$$

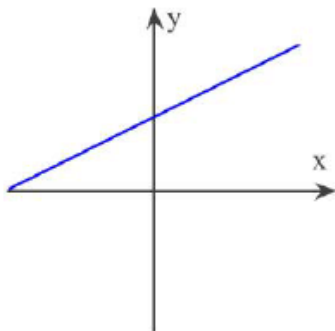
6. Evaluate the function  $f(x) = \sqrt{x + 1} - 9$  at the given values of the independent variable and simplify.

$$f(-1) =$$

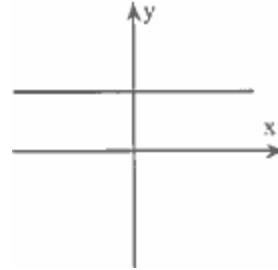
$$f(99) =$$

$$f(x - 1) =$$

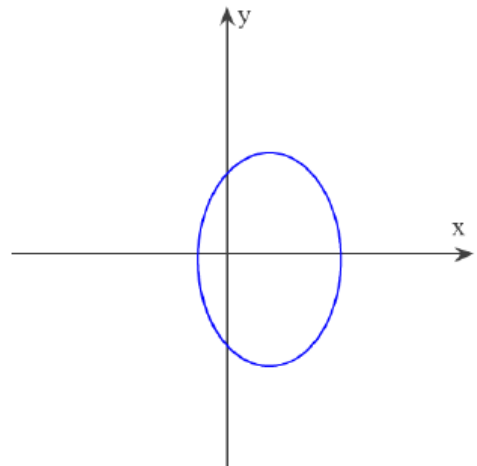
7. Use the vertical line test to determine if  $y$  is a function of  $x$  in the graph.



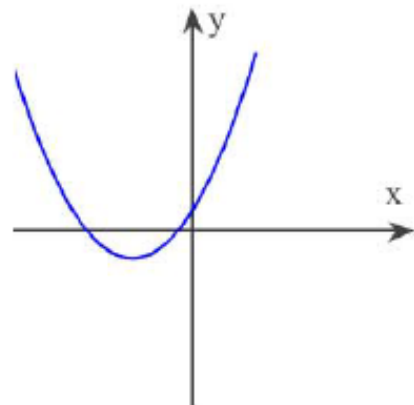
8. Use the vertical line test to determine if  $y$  is a function of  $x$  in the graph.



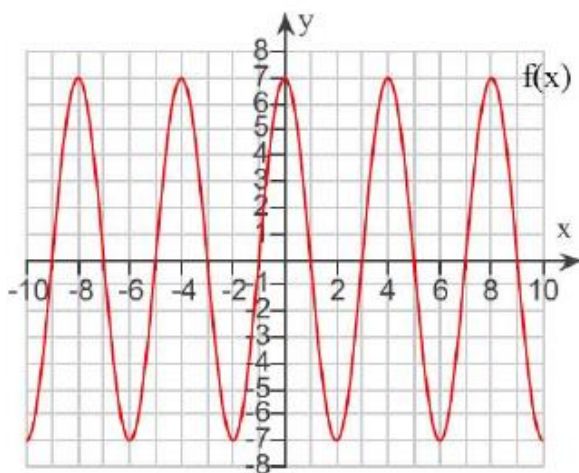
9. Use the vertical line test to determine if  $y$  is a function of  $x$  in the graph.



10. Use the vertical line test to determine if  $y$  is a function of  $x$  in the graph.

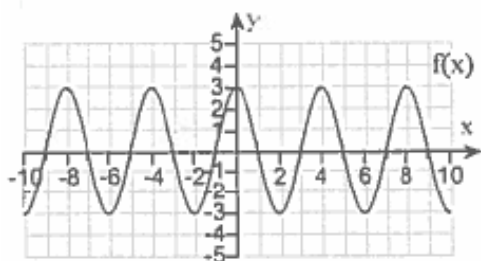


11. Use the graph of  $f$  to find the value of  $f(-8)$ .



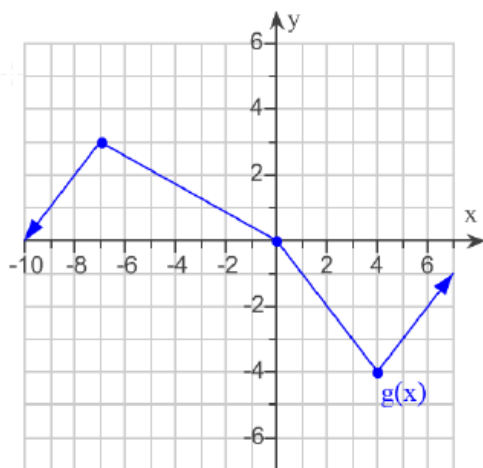
$f(-8) = \underline{\hspace{2cm}}$

12. Use the graph of  $f$  to find the value of  $f(-1)$ .



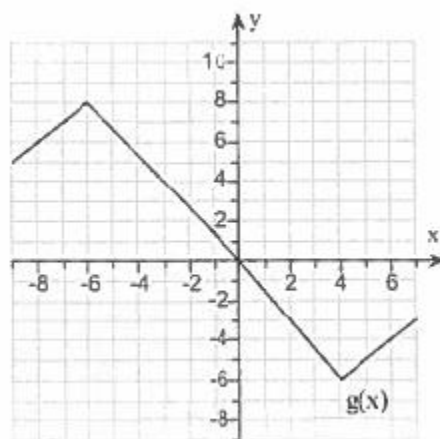
$f(-1) = \underline{\hspace{2cm}}$

13. Use the graph of  $f$  to find the value of  $g(-8)$ .



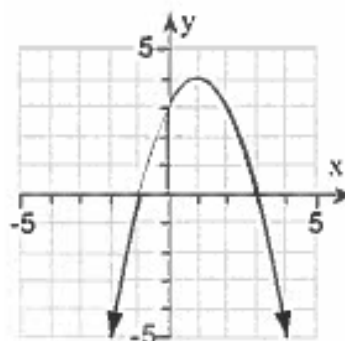
$g(-8) = \underline{\hspace{2cm}}$

14. For what value of  $x$  is  $g(x) = 8$ ?



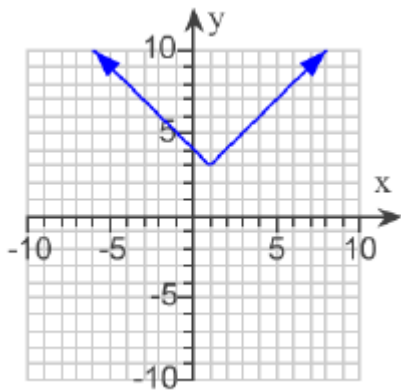
$x = \underline{\hspace{2cm}}$

15. Use the graph to determine **a.** the functions domain; **b.** the functions range; **c.** the x-intercepts, if any; **d.** the y-intercept, if any; and **e.** the missing values.



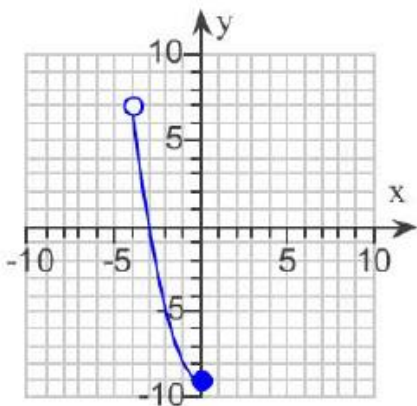
- The domain is \_\_\_\_\_.
- The range is \_\_\_\_\_.
- The x-intercepts is (are) \_\_\_\_\_.
- The y-intercept is \_\_\_\_\_.
- $f(-2) = \underline{\hspace{2cm}}$   $f(2) = \underline{\hspace{2cm}}$

16. Use the graph to determine **a.** the functions domain; **b.** the functions range; **c.** the x-intercepts, if any; **d.** the y-intercept, if any; and **e.** the missing values.



- The domain is \_\_\_\_\_.
- The range is \_\_\_\_\_.
- The x-intercepts is (are) \_\_\_\_\_.
- The y-intercept is \_\_\_\_\_.
- $f(0) =$  \_\_\_\_\_  $f(5) =$  \_\_\_\_\_

17. Use the graph to determine **a.** the functions domain; **b.** the functions range; **c.** the x-intercepts, if any; **d.** the y-intercept, if any; and **e.** the missing values.



- The domain is \_\_\_\_\_.
- The range is \_\_\_\_\_.
- The x-intercepts is (are) \_\_\_\_\_.
- The y-intercept is \_\_\_\_\_.
- $f(-1) =$  \_\_\_\_\_

ANSWER KEY:

1.	Function:	Yes
	Domain:	$\{4,5,8\}$
	Range:	$\{4,5,8\}$
2.	Function:	No
	Domain:	$\{4,6\}$
	Range:	$\{5,8\}$
3.	Function:	Yes
	Domain:	$\{5,9,1,4\}$
	Range:	$\{-6,4,1\}$
4.	$f(2) =$	5
	$f(x + 3) =$	$x^2 + 11x + 15$
	$f(-x) =$	$x^2 - 5x - 9$
5.	$f(7) =$	34
	$f(x + 2) =$	$6x + 4$
	$f(-x) =$	$-6x - 8$
6.	$f(-1) =$	-9
	$f(99) =$	1
	$f(x - 1) =$	$\sqrt{x} - 9$
7.	Function:	Y is a function of x
8.	Function:	Y is a function of x
9.	Function:	Y is not function of x
10.	Function:	Y is a function of x
11.	$f(-8) =$	7
12.	$f(-1) =$	0
13.	$g(-8) =$	2
14.	$x =$	-6
15.	Domain:	$(-\infty, \infty)$
	Range:	$(-\infty, 4]$
	x-intercepts:	$(-1,0), (3,0)$ or $-1,3$ (mymathlab)
	y-intercepts:	$(0,3)$ or 3 (mymathlab)
	$f(-2) =$	-5
	$f(2) =$	3
16.	Domain:	$(-\infty, \infty)$
	Range:	$[3, \infty)$
	x-intercepts:	No x-intercepts
	y-intercepts:	$(0,4)$ or 4 (mymathlab)
	$f(0) =$	4
	$f(5) =$	7
17.	Domain:	$(-4,0]$
	Range:	$[-9,7)$
	x-intercepts:	$(-3,0)$ or $-3$ (mymathlab)
	y-intercepts:	$(0, -9)$ or $-9$ (mymathlab)
	$f(-1) =$	-8